Work Operation Low Temperature Chamber

WU-200・WT-201

CAT.NO.E07113

Work operation low temperature chambers enabling simultaneous testing and specimen handling

To meet the demand for low temperature chambers that allow specimen handling during testing, ESPEC has created models that maintain a stable temperature environment in the chamber using an air curtain.
These are table models that enable seated operation, and feature an all-glass power sliding door for easy specimen viewing.

Compact chambers with the high performance demanded for standards testing

Air curtain prevents specimen dew condensation or chamber temperature variations when door is opened halfway.

Air flowing down the door surface reduces the amount of outside air entering the chamber. It prevents specimen dew condensation and reduces chamber temperature fluctuation when the door is partially opened to allow manipulation of specimens. If outside air enters the chamber, it is sucked into the bottom of the chamber front panel, allowing a stable chamber environment to be maintained.

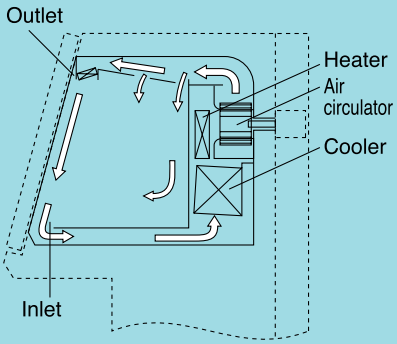
Outstanding temperature uniformity creates ideal chamber environment

The controlled test environment has a temperature uniformity of ±0.5°C over a wide temperature range of −40 to +85°C (model WU-200).

Rigorous testing at low temperatures

A reach-in port guard can be used for low temperatures, to prevent effects from outside air and enable more extensive testing.

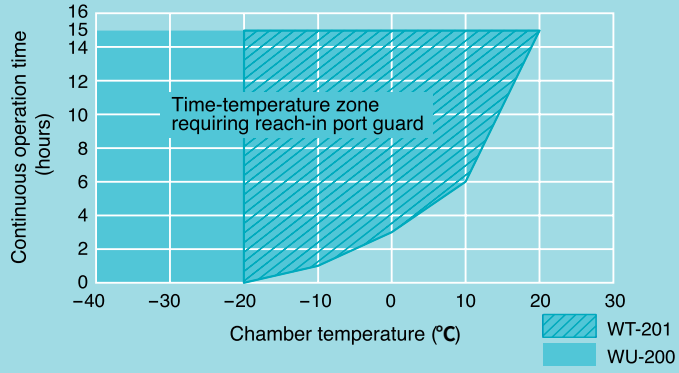
Chamber air flow



With reach-in port guard

Operating temperature range when using reach-in port guard

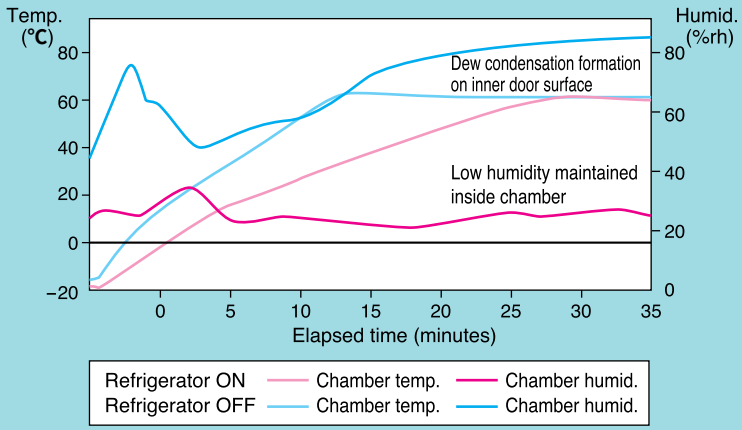
(in ambient atmosphere of +28°C/50%rh, wind speed of 0.2m/s max.)



- When the control section is open, the chamber can be operated continuously for up to about 15 hours.
- The reach-in port guard's operating temperature range varies according to the handling time, the number of handling operations and the ambient temperature/humidity.

Utility

Dehumidifier function to prevent dew condensation (between −20 and +60℃)



With door half-open

With door fully open

Dehumidifier function prevents dew condensation on specimens and inside glass door

ESPEC's work operation chambers come with an automatic dehumidifier function to prevent dew condensation forming on specimens or inside the glass door when the temperature is raised from low to high.

All-glass door provides clear view of specimens even at −40℃

The all-glass door makes the inside of the chamber easily visible. Made of a pair of glass layers separated by an air layer, the door has a heating element to prevent fogging or dew condensation. A light in the chamber makes specimens clearly visible.

Vertically sliding power door is designed to be easy to use and save space

The door is an easy-to-operate power sliding type that can be locked in place at the half-open position (opening height of 125mm). When fully open, its wide opening height of 380mm enables easy specimen loading. For safety, the door has an emergency stop switch and photoelectric sensor.

Table models enable seated work

ESPEC's work operation chambers are table models that measure just 750H × 750W × 440Dmm. They make it easy to handle specimens from a seated position. Operators can remain seated when carrying out extended test setup procedures or operation test procedures, making their work easier.

Designed for fight spaces

The top ventilation design eliminates the need for extra space behind of the test chamber. Protrusions at both sides have been eliminated, enabling parallel connection of measuring instruments or other devices. Casters are also provided for easy movement.

Utility

Register up to three test temperature settings using a simple, easy-to-operate design

The easy-to-read panel display and new easy-to-operate instrumentation let you register up to three user-set test temperature settings.

Measure specimen temperatures, for display on operation panel

A specimen temperature input terminal and thermocouple are provided standard, letting you measure specimen surface or internal temperatures. Measured temperatures are displayed on the operation panel.

Refrigerator defrost switch provides easy defrosting

The defrost function makes it easy to defrost the cooler. When defrosting, you can operate the refrigerator for a preset amount of time to prevent the humidity in the chamber rising. Defrosting takes 90 minutes. You can set the mode of operation after defrost—either test restart or standby.

Safety functions prevent equipment problems from damaging important specimens

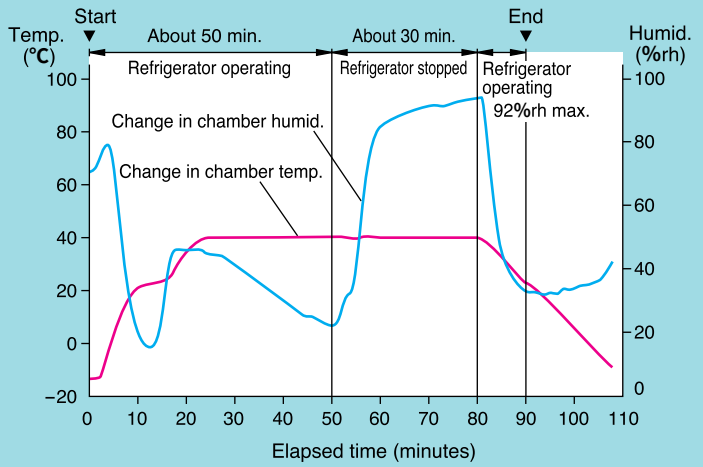
Several safety functions are provided to prevent equipment problems from damaging specimens. For example, a specimen power supply control terminal simultaneously shuts off the power to the test chamber and disconnects power to the specimens when an error occurs. There are upper and lower temperature limit alarms and an automatic overheat protection function triggered at 10°C over the set temperature. There is also an independent overheat protector for the test chamber itself.

Operation panel
(model WU-200; overcool protector is an option)

TEMPERATURE INDICATOR-CONTROLLER

Operating mode	Preset constant operation (3 settings)
Indication resolution	±0.1℃
Input	Thermocouple type T (Copper/Copper-Nickel)
Control	PID control
Communication function	E-BUS function
Auxiliary functions	Stable display function Specimen temperature display function Calibration function Power failure recovery operation selection function Manual defrost function Upper and lower temperature limit alarm function Input burn-out detection function Automatic overheat protection function

Change in chamber temp./ humid. while defrosting



SPECIFICATION

Model		WU-200	WT-201
Temperature control system		Balanced temperature control system (BTC system)	
Operating temperature		+5 to +35℃ (+41 to +95˚F)	
Recommended ambient environment		With door closed/ reach-in port guard in use: Temperature of +5 to +30℃ (+41 to +86˚F) With door half-open: Temperature of +5 to +28℃ (+41 to +82.4˚F), humidity of 50%rh max., wind speed of 0.2m/s max.	
Performance *1	Temperature range	−40 to +85℃ (−40 to +185˚F)	−20 to +70℃ (−4 to +158˚F)
	Temperature fluctuation *2	±0.3℃ (±0.5˚F)	
	Temperature uniformity *2	±0.5℃ (±0.9˚F)	
	Temperature heat-up time	−40 to +85℃ (−40 to +185˚F) within 70 min.	−20 to + 70℃ (−4 to + 158˚F) within 60 min.
	Temperature pull-down time	+20 to −40℃ (+68 to −40˚F) within 60 min.	+20 to −20℃ (+68 to −4˚F) within 25 min.
Illuminance		200 lx min. (at center of table surface)	
Noise level *3		60dB (with door fully closed)	
Construction	Refrigeration system	Mechanical type single-stage refrigeration system	
	Refrigerator	Hermetically sealed rotary compressor (for use with HFC-based refrigerant)	
	Cooler	Plate fin cooler	
	Heater	Nichrome strip wire heater	
	Air circulator	Sirocco fan	
	Door operation	Vertically sliding power door	
	Door glass *4	Outside: Tempered glass; Inside: Multilayer glass with heating element	
Fittings		Chamber lamp (100V AC, 13W), Specimen temperature input terminal, Temperature sensor terminal, E-BUS connector, Cable port (ø50mm), Casters (4 freewheeling casters with adjustable feet), Power cord (2.5m), Drain hose (ø12mm inner diameter)	
Dimensions	Inside dimensions *5	750W × 460H × 440D mm (29.5W × 18.1H × 17.3D inch)	
	Load capacity in chamber	30kg (equally distributed load)	
	Door opening size	Half-open : 125mm (4.9 inch) opening height Fully open: 380mm (14.9 inch) opening height	
	Effective area	Approx. 140L	
	Outside dimensions	With door fully closed: 990W × 1370H × 980D mm (38.9W × 53.9H × 38.5D inch) With door fully open : 990W × 1815H × 980D mm (38.9W × 71.4H × 38.5D inch)	
Dimensions required for installation		1040W × 1420H × 1030D mm (40.9W × 55.9H × 40.5D inch)	
Weight		370kg	
Power supply		200V AC 3ø 50/60Hz (power supply voltage fluctuation: within ±10% of rated value) Power equipment switch capacity: 250V AC, 30A	
Maximum power consumption, current		6kVA, 17A	

*1: Value for ambient temperature of +23℃ (+73.4˚F), with chamber empty and door fully closed.

*2: In accordance with JTM (Standard of Testing Machinery Association of Japan) K01-1998.

*3: Noise level is measured in an anechoic room, at 1 meter away from the front of the chamber, and 1.2 meters above the floor. (In conformance with JIS Z 8731, Characteristic A)

*4: Dew condensation may form on glass if power voltage is low and ambient humidity is 70%rh or higher.

*5: Excluding air curtain unit.

DANGER

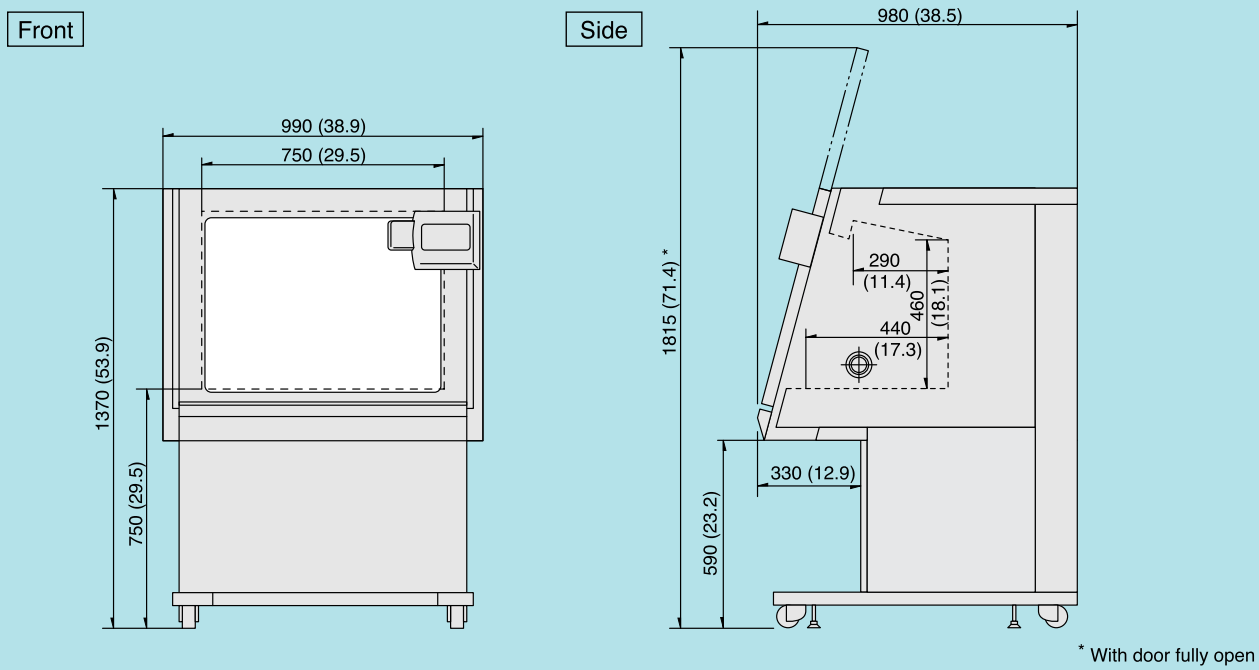
- Do not use specimens which are explosive or inflammable, or which contain such substances. To do so could be hazardous, as this may lead to fire or explosion.
- The chamber's insulation may not be able to withstand operation for extended periods with the reach-in port guard, and frost or dew condensation may form.
- Using the reach-in port guard for operation below 0℃ could damage the chamber. Contact ESPEC for information on operating the chamber below 0℃.

CAUTION

Be sure to read the instruction manual before operation.

DIMENSIONS

Unit: mm (inch)



* With door fully open

SAFETY DEVICES

- Leakage breaker for power supply
- Air circulator temperature switch
- Electrical compartment door switch
- Short circuit protection fuse for control circuit
- Reverse-prevention relay
- Circuit protector
- Refrigerator safety circuit
  (high-pressure switch, thermal relay, temperature switch)
- Door motor overload shutoff circuit
- Door emergency stop switch
- Photoelectric sensor
- Overheat protector
- Thermal fuse
- Specimen power supply control terminal

OPTIONS

- Paperless recorder (portable type)
  Temperature range: −50 to +100℃
  Number of inputs: 1 (5 more channels can be turned ON)
  Data saving cycle: 5 sec.
  External recording media: CF memory card (32MB)

Paperless recorder (portable type)

- Temperature recorder (installed separately): 100mm, 6 dots
- Overcool protector
- Thermocouple type T (Copper/Copper-Nickel): 2m, 4m, 6m
- Cable port rubber plug
- E-BUS cables: 5m, 10m

ACCESSORIES

- Reach-in port guard 1
- Connector
  For specimen power supply control terminal 1
  For thermocouple 2
- Thermocouple (2m) 1
- Cable port rubber plug (φ50mm) 1
- Cartridge fuses 10 A 2
  3 A 1
- User's manual 1